

---

---

ANALYSES OF IOWA COALS,  
LIMESTONES AND CHALKS  
AND  
CLAYS, SHALES AND MARLS

---

---



## ANALYSES OF IOWA COALS.

529

## ANALYSES OF IOWA COALS.

County	Moisture	Volatile hydro- carbons	Fixed car- bon	Ash	Sulphur	Calorimetry B. T. U.
Adams—						
Average 6.....	8.76	34.22	45.12	11.89	3.60	.....
Appanoose—						
Average 12.....	7.26	35.87	47.67	9.20	3.75	.....
Centerville.....	11.49	33.47	48.56	6.52	2.92	12681
Mystic.....	16.21	32.74	46.00	5.05	2.64	12780
Boone—						
Average 6.....	6.82	40.99	44.45	7.74	4.01	.....
Crowe Coal Co.....	4.03	39.79	48.30	7.88	3.99	12726
Street Railway Power Plant.....	11.49	26.33	37.83	24.36	9.53	.....
Dallas—						
Average 8.....	8.25	35.11	42.17	14.47	4.24	.....
Davis—						
Average 5.....	2.95	41.82	44.47	10.66	6.07	.....
Bloomfield.....	5.24	37.00	50.66	7.10	2.25	13204
Greene—						
Average 4.....	9.01	42.11	42.03	6.86	3.37	.....
Guthrie—						
Average 7.....	7.41	35.82	42.18	14.59	6.08	.....
Jasper—						
Average 4.....	7.40	37.64	43.17	11.08	3.46	.....
Colfax.....	5.45	40.49	46.97	7.09	2.91	12134
Keokuk—						
Average 6.....	6.11	39.43	44.39	10.07	6.36	.....
Lucas—						
Average 5.....	9.40	37.65	44.08	8.87	3.34	.....
Mahaska—						
Average 7.....	4.29	43.04	44.56	8.11	4.38	.....
Marion—						
Average 4.....	6.17	37.79	49.27	6.78	.....	.....
Monroe—						
Average 8.....	5.55	40.38	44.42	9.65	5.21	.....
Hocking (Mine No. 3).....	6.63	38.37	40.88	14.12	6.92	.....
Hocking (Mine No. 2).....	5.80	42.56	42.71	9.03	3.75	12560
Hilton.....	6.51	37.97	45.07	10.45	3.02	12396
Buxton No. 10.....	9.48	35.58	46.07	10.87	2.06	12030
Buxton No. 9.....	6.19	43.60	42.30	5.91	3.45	.....
Polk—						
Average 5.....	6.43	38.84	44.77	11.96	4.87	.....
Marquisville.....	5.09	43.30	47.73	3.88	2.60	10574

## ANALYSES OF IOWA COALS—CONTINUED.

County	Moisture	Volatile hydro- carbons	Fixed car- bon	Ash	Sulphur	Calorimetry B. T. U.
Scott— Average 6.....	3.61	39.95	47.13	9.29	4.71	.....
Taylor— Average 5.....	5.93	36.17	44.54	11.34	4.85	.....
Van Buren— Average 3.....	8.10	40.01	47.43	4.45	.....	.....
Wapello— Average 11.....	5.42	38.73	45.25	10.60	5.85	.....
Pekay.....	9.98	41.46	42.21	6.35	2.53	13050
Laddsdale.....	4.23	40.92	45.76	9.09	4.75	13141
Warren— Average 4.....	10.60	38.26	43.75	7.36	4.44	.....
Wayne— Average 4.....	9.01	34.48	43.43	13.07	3.84	.....
Webster— Average 10.....	7.83	37.23	43.42	11.52	5.08	.....
Lehigh.....	17.47	31.35	39.59	11.59	4.87	.....

# ANALYSES OF LIMESTONES AND CHALKS.

ARRANGED ALPHABETICALLY BY COUNTIES.

Location and Description	Horizon	Composition						Authority
		Insoluble	Iron and alumina	Calcium carbonate	Magnesium carbonate	Sulphur trioxide	Moisture and organic matter	
APPANOOSE COUNTY— Rathbun.....	Des Moines.....	9.90	6.40	83.37	Trace	.....	.....	Lundteigen
BLACK HAWK COUNTY— Waterloo.....	Cedar Valley.....	1.92	4.20	63.59	30.92	.....	.....	C. E. Ellis
BREMER COUNTY— Waverly.....	Devonian.....	46.34	19.90	18.33	4.20	0.01	3.82	Lundteigen
Waverly.....	Devonian.....	2.25	1.32	88.65	6.70	.....	0.35	Lundteigen
Waverly.....	Devonian.....	7.74	1.67	86.80	2.35	0.86	1.08	C. E. Ellis
Section 36—Douglas township..	Niagara.....	1.53	0.48	54.32	43.41	.....	0.26	N. Knight
Quarter section run.....	Wapsipinicon.....	0.71	.....	96.57	1.80	.....	0.51	N. Knight
Section 8—Polk township.....	Cedar Valley.....	3.28	2.12	55.23	39.03	.....	0.39	N. Knight
CEDAR COUNTY— Cedar county.....	Otis.....	1.52	0.58	93.61	4.20	.....	.....	N. Knight
Rochester.....	Lower Davenport.....	0.86	0.30	96.91	1.93	.....	.....	N. Knight
Rochester.....	Lower Davenport.....	0.40	0.10	78.75	20.16	.....	.....	N. Knight
Rock Creek.....	Gower.....	0.12	0.26	55.76	43.85	.....	.....	N. Knight
Cedar Valley.....	Gower.....	0.40	0.70	56.40	42.60	.....	.....	N. Knight
Lime burning { Lime City.....	Gower.....	0.60	1.40	55.30	43.00	.....	.....	N. Knight
rock..... { Cedar Valley..	Gower.....	0.23	0.35	51.27	48.09	.....	.....	N. Knight
Cedar Valley.....	Coggan.....	1.20	0.90	58.20	39.50	.....	.....	N. Knight
Cedar county.....	Otis.....	0.24	0.34	96.73	2.94	.....	.....	N. Knight
Cedar county.....	Wapsipinicon.....	18.66	2.00	58.21	21.00	.....	.....	N. Knight

## ANALYSES OF LIMESTONES AND CHALKS.

ARRANGED ALPHABETICALLY BY COUNTIES.

Location and Description	Horizon	Composition						Authority
		Insoluble	Iron and alumina	Calcium carbonate	Magnesium carbonate	Sulphur trioxide	Moisture and organic matter	
CERRO GORDO COUNTY—								
Mason City.....	Cedar Valley.....	0.72	0.91	94.22	1.32	0.98	2.51	L. G. Michael
Mason City.....	Cedar Valley.....	0.63	0.71	97.48	0.99	.....	0.51	A. O. Anderson
CLARKE COUNTY—								
Carpenter quarry, Osceola.....	Missouri.....	8.64	1.54	88.92	0.62	.....	.....	A. O. Anderson
Carpenter quarry, Osceola.....	Missouri.....	8.90	1.20	89.30	0.06	.....	0.28	A. O. Anderson
Carpenter quarry, Osceola.....	Missouri.....	13.72	1.26	82.50	2.05	.....	0.59	A. O. Anderson
DELAWARE COUNTY—								
Independence.....	Wapsipinicon.....	8.14	1.20	87.36	3.56	.....	0.02	A. O. Anderson
DES MOINES COUNTY—								
Burlington.....	Osage.....	5.18	0.87	93.11	0.84	.....	.....	Geo. Steiger
DUBUQUE COUNTY—								
Cascade.....	Niagara.....	11.34	0.81	48.53	37.34	.....	0.26	L. G. Michael
Eagle Point—Lime burning rock	Galena.....	2.15	0.82	54.84	41.79	.....	0.02	
Eagle Point—Non-lime burning rock.....	Galena.....	8.63	0.85	51.52	39.52	.....	0.04	L. G. Michael
Spechts Ferry—General sample	Platteville.....	5.00	2.07	89.64	1.72	0.85	.....	Lundteigen
Spechts Ferry.....	Platteville.....	8.98	2.58	73.65	12.18	.....	.....	Lundteigen
Spechts Ferry.....	Platteville.....	7.28	1.27	83.77	5.42	0.39	.....	Lundteigen
Spechts Ferry.....	Platteville.....	2.25	1.32	88.64	6.80	.....	.....	Lundteigen
Spechts Ferry.....	Platteville.....	7.50	6.17	79.50	3.97	1.48	0.15	L. G. Michael
Spechts Ferry.....	Platteville.....	7.94	12.05	73.38	3.52	1.69	0.10	L. G. Michael

Spechts Ferry.....	Platteville.....	10.71	6.69	78.67	0.28	1.51	0.15	L. G. Michael
Spechts Ferry.....	Platteville.....	11.24	6.31	78.51	0.24	1.58	0.10	L. G. Michael
Spechts Ferry.....	Platteville.....	5.74	6.69	83.56	0.25	1.77	0.10	L. G. Michael
Near Zollicoffer Lake, north of Dubuque.....	Platteville.....	8.28	4.67	80.14	2.37	2.60	0.13	L. G. Michael
Near Zollicoffer Lake, north of Dubuque.....	Platteville.....	8.02	5.78	77.93	4.43	0.22	0.16	L. G. Michael
Near Zollicoffer Lake, north of Dubuque.....	Platteville.....	6.79	4.61	78.24	5.12	1.74	0.04	L. G. Michael
Near Zollicoffer Lake, north of Dubuque.....	Platteville.....	3.85	6.03	84.16	1.93	0.64	1.71	L. G. Michael
Near Zollicoffer Lake, north of Dubuque.....	Platteville.....	4.54	2.54	86.33	3.54	0.22	0.08	L. G. Michael
Near Zollicoffer Lake, north of Dubuque.....	Platteville.....	3.26	0.83	90.20	2.65	1.64	0.06	L. G. Michael
FAYETTE COUNTY—								
Clermont.....	Maquoketa.....	11.95	2.80	84.80	0.45	.....	.....	L. G. Michael
Wilkes Williams' quarry, six miles south of Postville.....	Hopkinton.....	8.65	0.66	58.13	32.18	.....	.....	A. O. Anderson
Wilkes Williams' quarry, six miles south of Postville.....	Hopkinton.....	8.50	5.37	41.16	45.18	.....	.....	A. O. Anderson
Wilkes Williams' quarry, six miles south of Postville.....	Hopkinton.....	9.00	3.00	52.12	36.05	.....	.....	A. O. Anderson
Wilkes Williams' quarry, six miles south of Postville.....	Hopkinton.....	10.64	1.06	50.03	38.50	.....	.....	A. O. Anderson
Wilkes Williams' quarry, six miles south of Postville.....	Hopkinton.....	9.52	3.10	52.14	35.72	.....	.....	A. O. Anderson
Auburn.....	Hopkinton.....	0.68	0.50	98.52	.....	.....	.....	L. G. Michael
HAMILTON COUNTY—								
Webster City.....	Saint Louis.....	1.60	0.80	92.85	5.31	.....	.....	A. O. Anderson
HUMBOLDT COUNTY—								
Humboldt.....	Kinderhook.....	0.50	1.12	97.20	2.00	.....	.....	A. O. Anderson
Near Gilmore.....	Kinderhook.....	.....	.....	99.62	.....	.....	.....	J. B. Weems
Humboldt.....	Saint Louis.....	0.91	1.21	97.98	.....	.....	.....	Murray
JACKSON COUNTY—								
Maquoketa.....	Hopkinton.....	0.58	0.36	30.88	21.56	.....	.....	C. E. Ellis
Maquoketa.....	Hopkinton.....	0.51	0.47	30.56	21.54	.....	.....	C. E. Ellis

ANALYSES OF LIMESTONES AND CHALKS.  
ARRANGED ALPHABETICALLY BY COUNTIES.

534

GEOLOGY OF IOWA QUARRY PRODUCTS.

Location and Description	Horizon	Composition						Authority
		Insoluble	Iron and alumina	Calcium carbonate	Magnesium carbonate	Sulphur tri-oxide	Moisture and organic matter	
JOHNSON COUNTY— Iowa City.....	Cedar Valley.....	3.08	1.97	89.79	4.66	0.06	.....	Geo. Steiger
JONES COUNTY—								
J. A. Green, Stone City.....	Gower, Anamosa.....	0.97	0.42	57.19	41.44	.....	.....	A. O. Anderson
J. A. Green, Stone City.....	Gower, Anamosa.....	2.00	1.20	56.00	40.98	.....	.....	A. O. Anderson
J. A. Green, Stone City.....	Gower, Anamosa.....	4.46	1.70	56.08	37.80	.....	.....	A. O. Anderson
J. A. Green, Stone City.....	Gower, Anamosa.....	0.20	0.72	56.57	42.59	.....	.....	A. O. Anderson
J. A. Green, Stone City.....	Gower, Anamosa.....	1.20	0.50	58.86	39.58	.....	.....	A. O. Anderson
J. A. Green, Stone City.....	Gower, Anamosa.....	1.88	1.02	51.64	44.76	.....	.....	A. O. Anderson
J. A. Green, Stone City.....	Gower, Anamosa.....	0.96	0.72	63.56	34.76	.....	.....	A. O. Anderson
J. A. Green, Stone City.....	Gower, Anamosa.....	0.78	0.54	52.12	46.98	.....	.....	A. O. Anderson
J. A. Green, Stone City.....	Gower, Anamosa.....	1.13	1.50	58.21	38.60	.....	.....	A. O. Anderson
Dearborn & Sons, Stone City ..	Gower, Anamosa.....	1.97	0.89	55.68	41.53	.....	.....	A. O. Anderson
Dearborn & Sons, Stone City ..	Gower, Anamosa.....	2.05	0.37	54.64	43.35	.....	.....	A. O. Anderson
Dearborn & Sons, Stone City ..	Gower, Anamosa.....	1.70	0.60	55.70	41.74	.....	.....	A. O. Anderson
Dearborn & Sons, Stone City ..	Gower, Anamosa.....	1.90	1.43	56.60	39.97	.....	.....	A. O. Anderson
Dearborn & Sons, Stone City ..	Gower, Anamosa.....	2.00	0.40	55.18	41.70	.....	.....	A. O. Anderson
LOUISA COUNTY— Morning Sun.....	.....	1.60	1.20	97.02	0.32	.....	.....	A. O. Anderson



MADISON COUNTY—								
Earlham.....	Bethany.....	7.85	1.00	91.15	0.61			L. G. Michael
Peru.....	Bethany.....	17.16	2.64	72.76	2.86	0.95	0.30	L. G. Michael
Earlham.....	Missouri.....	10.92	2.37	84.87	1.58			Geo. Steiger
Winterset.....	Missouri.....	12.63	1.18	84.34	2.19		0.02	A. O. Anderson
MAHASKA COUNTY—								
Oskaloosa.....	Saint Louis.....	4.01	0.59	95.30				Murray
MARION COUNTY—								
Tracy.....	Saint Louis.....	1.57	0.66	94.60	6.66			Murray
Pella.....	Saint Louis.....	4.92	3.39	81.39				Lundteigen
MARSHALL COUNTY—								
Oölite. Quarry.....	Kinderhook.....	0.77	0.18	98.30	0.59		0.16	G. E. Patrick
Blue limestone. Quarry.....	Kinderhook.....	0.96	0.41	97.95	0.38		0.30	G. E. Patrick
Iowa caen stone. Quarry.....	Kinderhook.....	1.24	0.50	90.28	7.77		0.21	G. E. Patrick
Stratified limestone. Quarry..	Kinderhook.....	1.22	0.50	90.04	8.08		0.16	G. E. Patrick
MITCHELL COUNTY—								
Osage.....	Cedar Valley.....	0.78	0.12	98.01	0.15			A. O. Anderson
Osage.....	Cedar Valley.....	0.12	0.12	98.01	0.15		0.35	A. B. Hoen
Osage.....	Cedar Valley.....	2.21	3.82	90.17	1.03		2.63	A. O. Anderson
MONTGOMERY COUNTY—								
Stennett.....	Missouri.....	7.97	1.26	89.44	1.92			A. O. Anderson
PLYMOUTH COUNTY—								
Chalk rock, Westfield.....	Cretaceous.....			83.70	2.48		0.08	J. B. Weems
Chalk rock, Le Mars.....	Cretaceous.....			94.39	0.70		0.06	J. B. Weems
SCOTT COUNTY—								
Bettendorf.....	Wapsipinicon.....	4.46	0.70	79.60	15.40			C. E. Ellis
Le Claire Stone Co., Bettendorf	Wapsipinicon.....	2.36	2.20	94.57	0.81			C. E. Ellis
Le Claire Stone Co., Bettendorf	Wapsipinicon.....	0.54	0.14	98.49	0.72			C. E. Ellis
Bettendorf.....	Wapsipinicon.....	1.04	0.28	90.00	8.36			C. E. Ellis
Bettendorf.....	Wapsipinicon.....	8.48	0.72	89.25	1.42			C. E. Ellis
Bettendorf.....	Wapsipinicon.....	26.40	9.25	44.82	10.84		8.82	C. E. Ellis
Bettendorf.....	Wapsipinicon.....	16.08	3.26	49.72	29.06		1.86	C. E. Ellis

ANALYSES OF LIMESTONES AND CHALKS.  
ARRANGED ALPHABETICALLY BY COUNTIES.

Location and Description	Horizon	Composition						Authority
		Insoluble	Iron and alumina	Calcium carbonate	Magnesium carbonate	Sulphur tri-oxide	Moisture and organic matter	
SCOTT COUNTY--CON.								
Bettendorf.....	Wapsipinicon.....	5.98	0.30	90.91	2.77	.....	.....	C. E. Ellis
Bettendorf.....	Wapsipinicon.....	1.32	0.38	76.23	22.21	.....	.....	C. E. Ellis
Bettendorf.....	Wapsipinicon.....	1.10	0.34	80.95	17.68	.....	.....	C. E. Ellis
Bettendorf.....	Wapsipinicon.....	1.20	1.08	97.32	0.76	.....	.....	C. E. Ellis
Le Claire Stone Co., Le Claire.	Gower, Anamosa.....	4.76	1.22	58.72	35.38	.....	.....	A. O. Anderson
Le Claire Stone Co., Le Claire.	Gower, Anamosa.....	7.44	1.37	51.55	40.36	.....	.....	A. O. Anderson
Le Claire Stone Co., Le Claire.	Gower, Anamosa.....	5.60	1.40	53.96	39.00	.....	.....	A. O. Anderson
Le Claire Stone Co., Le Claire.	Gower, Anamosa.....	7.08	1.24	53.17	35.03	.....	.....	A. O. Anderson
SIOUX COUNTY--								
Hawarden.....	Cretaceous.....	21.92	6.68	64.30	5.38	.....	.....	Newberry
TAYLOR COUNTY--								
Fred Andrews, Bedford.....	Missouri.....	1.80	3.20	93.56	1.54	.....	.....	A. O. Anderson
Fred Andrews, Bedford.....	Missouri.....	1.48	0.48	97.42	1.14	.....	.....	A. O. Anderson
Fred Andrews, Bedford.....	Missouri.....	1.20	0.70	96.96	1.28	.....	.....	A. O. Anderson
VAN BUREN COUNTY--								
West of Farmington.....	Saint Louis.....	10.14	0.90	88.73	0.38	.....	0.15	C. E. Ellis
Chequest creek, Keosauqua...	Saint Louis.....	3.12	1.38	94.81	0.52	.....	0.26	A. O. Anderson
Upper twenty feet of limestone.								
East of Bentonsport.....	Saint Louis.....	5.28	0.52	93.34	1.00	.....	0.20	C. E. Ellis

WAPELLO COUNTY—									
Ottumwa.....	Saint Louis.....	6.83	2.66	88.43	0.15	0.13	.....	Geo. Steiger	
WINNESHIEK COUNTY—									
Decorah.....	Galena.....	14.53	6.49	72.89	1.03	0.48	0.15	L. G. Michael	
Decorah.....	Galena.....	3.86	2.54	91.19	0.84	.....	0.05	L. G. Michael	
Decorah.....	Galena.....	6.87	1.00	88.97	2.86	.....	0.30	C. E. Ellis	

## ANALYSES OF CLAYS, SHALES AND MARLS.

ARRANGED ALPHABETICALLY BY COUNTIES.

Locality and Description	Horizon	Composition										Authority	
		Silica SiO <sub>2</sub>	Alumina Al <sub>2</sub> O <sub>3</sub>	Ferric Oxide Fe <sub>2</sub> O <sub>3</sub>	Lime CaO	Magnesia MgO	Sulphur tri- oxide SO <sub>3</sub>	Potash K <sub>2</sub> O	Soda Na <sub>2</sub> O	Loss on ig- nition	Moisture		
CERRO GORDO COUNTY—													
Mason City.....	Lime Creek...	54.64	14.62	5.69	5.16	2.90	.....	4.77	1.12	8.54	0.85	G. E. Patrick	
Clay Banks near Portland.	Lime Creek...	49.93	20.23	4.32	6.70	2.79	1.14	2.25	2.17	3.29	1.21	J. B. Weems	
Clay Banks near Portland.	Lime Creek...	50.15	19.68	4.08	9.78	2.26	1.18	1.62	1.03	0.76	1.00	J. B. Weems	
Clay Banks near Portland.	Lime Creek...	20.26	11.28	2.76	31.42	3.44	2.09	1.09	0.50	2.72	0.73	J. B. Weems	
Clay Banks near Portland.	Lime Creek...	5.36	3.79	1.20	48.18	2.70	1.02	0.46	0.27	0.17	0.35	J. B. Weems	
Clay Banks near Portland.	Lime Creek...	20.82	11.55	2.76	30.01	4.01	1.19	1.41	0.72	3.67	0.75	J. B. Weems	
Clay Banks near Portland.	Lime Creek...	7.59	5.62	1.56	44.34	3.22	0.51	0.48	0.29	2.44	0.68	J. B. Weems	
Clay Banks near Portland.	Lime Creek...	27.26	19.15	4.32	16.47	2.23	1.11	2.20	1.55	2.04	0.93	J. B. Weems	
Mason City.....	Lime Creek...	51.95	18.34	7.56	4.14	3.26	2.76	4.12	.....	7.49	0.42	J. B. Weems	
Mason City.....	Lime Creek...	54.64	14.62	6.45	9.21	6.09	.....	5.89	.....	3.74	0.85	G. E. Patrick	
CLARKE COUNTY—													
Oscola.....	Missouri.....	55.52	14.51	9.09	5.00	2.60	0.28	1.50	1.32	8.28	1.39	C. E. Ellis	
CLAYTON COUNTY—													
St. Sebald.....	Maquoketa ...	52.29	20.64	5.16	1.89	1.12	.....	2.77	8.27	2.76	.....	J. B. Weems	
Edgewood.....	Maquoketa ...	44.39	13.72	7.80	7.88	6.05	.....	1.56	5.29	.....	0.89	J. B. Weems	
Edgewood, Sperry Twp...	Maquoketa ...	52.29	20.64	5.16	1.89	1.12	.....	2.77	8.27	5.17	.....	J. B. Weems	
Edgewood, Newberry Park	Maquoketa ...	44.39	13.72	7.80	7.88	6.05	.....	1.56	5.29	12.18	0.89	J. B. Weems	
DALLAS COUNTY—													
Van Meter.....	Des Moines...	86.63	10.92	0.10	.....	.....	.....	.....	.....	2.32	.....	W. S. Robinson	

DES MOINES COUNTY—														
Danville.....	Des Moines...	74.82	15.54	2.72	0.73	0.45	.....	0.32	0.38	4.97	0.22	J. B. Weems		
DUBUQUE COUNTY—														
Spechts Ferry.....	Platteville ...	54.90	25.50	.....	0.41	0.30	.....	9.55		9.10	.....	Lundteigen		
Spechts Ferry.....	Platteville ...	49.32	20.16	8.30	5.33	1.53	.....	4.68	.....	4.82	0.72	L. G. Michael		
North of Dubuque.....	Platteville ...	50.22	12.45	9.08	7.75	1.40	1.16	5.23	.....	3.81	1.71	L. G. Michael		
Graf.....	Maquoketa ...	42.53	16.83	5.66	5.66	4.82	.....	3.70	4.10	15.76	.....	J. B. Weems		
FAYETTE COUNTY—														
Auburn.....	Maquoketa ...	49.60	6.36	6.25	22.45	0.20	.....	0.90	0.35	13.56	.....	L. G. Michael		
Clermont Brick & Tile Co.	Maquoketa ...	28.82	10.37	3.76	19.14	5.40	.....	5.38	7.41	16.24	0.43	J. B. Weems		
FLOYD COUNTY—														
Rockford.....	Lime Creek...	50.40	.....	31.22	4.30	2.74	1.54	4.96	.....	4.51	0.41	L. G. Michael		
GUTHRIE COUNTY—														
Panora.....	Des Moines...	53.82	17.53	5.65	4.40	2.19	3.34	1.74	1.12	8.29	2.62	C. E. Ellis		
Glendon.....	Missouri.....	48.91	17.66	6.62	8.42	1.90	0.28	2.61	1.44	10.23	1.60	C. E. Ellis		
Guthrie Center.....	Des Moines...	68.62	14.98	4.16	1.48	1.09	.....	1.50	1.86	3.55	2.78	G. E. Patrick		
HARDIN COUNTY—														
Eldora Pipe & Tile Co....	Des Moines...	72.09	16.24	1.08	0.48	0.48	0.14	1.08	0.77	5.18	2.46	C. E. Ellis		
LEE COUNTY—														
Belfast.....	Osage.....	45.00	16.68	3.86	10.04	3.69	2.26	1.96	1.16	15.02	0.48	C. E. Ellis		
MADISON COUNTY—														
Winterset.....	Missouri.....	26.72	3.83	3.11	36.08	0.48	0.22	1.12	0.18	28.40	0.55	C. E. Ellis		
POLK COUNTY—														
Des Moines.....	Des Moines...	63.75	19.78	5.75	1.55	1.22	.....	0.54	1.20	2.92	.....	J. B. Weems		
Des Moines.....	Des Moines...	61.36	22.12	6.07	1.90	0.80	.....	1.22		4.52	.....	L. G. Michael		
Des Moines.....	Des Moines...	55.56	21.33	10.56	1.59	2.94	.....	.....	.....	4.65	0.97	C. O. Bates		
Des Moines.....	Des Moines...	64.41	20.43	5.88	0.34	1.71	.....	.....	1.90	3.93	1.27	C. O. Bates		
SCOTT COUNTY—														
Pleasant Valley.....	Des Moines...	64.74	17.98	5.36	0.00	0.60	0.58	1.73	0.45	7.48	1.70	C. E. Ellis		
Pleasant Valley.....	Des Moines ..	72.20	15.44	2.10	1.32	0.00	0.55	0.31	2.83	5.23	0.40	C. E. Ellis		
Le Claire Stone Co., Davenport.....	Des Moines...	71.90	12.64	2.20	1.70	1.34	2.68	2.64	Trace	4.23	1.10	C. E. Ellis		

ANALYSES OF CLAYS, SHALES AND MARLS.  
ARRANGED ALPHABETICALLY BY COUNTIES.

Locality and Description	Horizon	Composition										Authority
		Silica SiO <sub>2</sub>	Alumina Al <sub>2</sub> O <sub>3</sub>	Ferric Oxide Fe <sub>2</sub> O <sub>3</sub>	Lime CaO	Magnesia MgO	Sulphur tri- oxide SO <sub>3</sub>	Potash K <sub>2</sub> O	Soda Na <sub>2</sub> O	Loss on ig- nition	Moisture	
VAN BUREN COUNTY— Farmington.....	Osage.....	35.48	15.85	5.43	12.56	6.24	3.36	1.59	0.26	17.14	1.88	A. O. Anderson
WAPELLO COUNTY— Ottumwa.....	Des Moines...	53.86	26.28	4.32	0.12	0.43	.....	2.52	0.43	11.08	.....	J. B. Weems
WEBSTER COUNTY— Fort Dodge.....	Des Moines...	67.96	21.64	1.12	0.51	0.67	0.44	.....	.....	.....	7.27	C. E. Ellis
Kalo.....	Des Moines...	70.20	16.70	4.00	0.28	0.63	0.82	1.75	1.39	3.70	0.53	J. B. Weems
Lehigh Clay Works, Lehigh	Des Moines...	53.08	17.71	8.64	4.05	0.94	.....	1.25	3.70	9.30	.....	J. B. Weems
Fort Dodge Pottery Co...	Des Moines...	66.00	19.32	0.80	2.85	0.54	.....	1.15	2.49	6.84	.....	J. B. Weems